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The Differences of 18~60 Years Old Adults' Basal Metabolism depend on Their BMI in Nanjing

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Objective By comparing the differences of adults' basic metabolic values depend on their BMI, we try to make clear the relationship between different somatotype and human daily total energy expenditure (EE) because basic metabolism accounts for the 60~70% of the EE. Then we can provide a reference including reasonable energy intake and suitable physical activity load for adults of different somatotype.

Methods A self-made health questionnaire was used to select these who are aged of 18~60 years old with no bad hobby and no bad habits (women were not in the period of menstruation), we totally recruited 181 volunteers of which 81 were normal somatotype ($18.5 \leq \text{BMI} < 24$, 33 Male 39.76 ± 12.23 years old, $\text{BMI} 21.90 \pm 1.40$ vs Female 39.69 ± 13.05 years old, $\text{BMI} 21.38 \pm 1.40$) and 72 were overweight somatotype ($24 \leq \text{BMI} < 28$, 49 Male 40 ± 13.38 years old, $\text{BMI} 25.26 \pm 1.15$ vs Female 40.61 ± 10.72 years old, $\text{BMI} 25.53 \pm 1.09$) and 28 were obese somatotype ($28 \leq \text{BMI}$, 18 Male 39.33 ± 14.23 years old, $\text{BMI} 30.14 \pm 2.22$ vs female 41 ± 12.10 years old, $\text{BMI} 29.36 \pm 1.25$), and the basic metabolic value was measured by respiratory chamber.

Results The basal metabolic values of male and female aged of 18~60 years old in Nanjing were $2077.10 \pm 262.12 \text{ Kcal}$ and $1682.87 \pm 203.69 \text{ Kcal}$ respectively. The basic metabolic values of male and female with normal BMI are $2046.41 \pm 242.73 \text{ Kcal}$ and $1628.65 \pm 184.28 \text{ kcal}$ respectively. The basic metabolic values of male and female with overweight BMI are $2061.10 \pm 232.90 \text{ Kcal}$ and $1741.10 \pm 220.14 \text{ Kcal}$ respectively. The basal metabolic values of male and female with obese BMI are $2176.92 \pm 350.64 \text{ Kcal}$ and $1809.20 \pm 175.82 \text{ Kcal}$. The basic metabolic values of adults with different sex but in the same BMI all reached a statistically significant difference ($P \leq 0.01$). To those adults with same sex but in different BMI, the basic metabolic values between normal BMI and overweight BMI or obese BMI all reached a statistically significant difference for female ($P \leq 0.05$), but there were no statistically significant difference for male ($P > 0.05$).

Conclusions For 18~60 years old adults, it is important to actively control their weight if they find their BMI are overweight, especially for women, because women are significantly more easy to return to normal BMI compare with men, but the advantages depend on different sex will disappeared if they keep on develop into obese BMI.